FIELD MODIFICATION FORM
FOR
CORNELL DUBILIER ELECTRONICS SUPERFUND SITE: OU4 BOUND BROOK
THE LOUIS BERGER GROUP, INC.

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**DATE**: May 15, 2013

**DOCUMENT**: Quality Assurance Project Plan
Cornell Dubilier Electronics Superfund Site: OU4 Bound Brook

**ACTIVITY**: Field Modification No. 9
Veterans Memorial Park – Floodplain Soil Investigation

**REQUESTED MODIFICATION**:
On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), The Louis Berger Group, Inc. (Berger) and ARCADIS/Malcolm Pirnie, Inc. are conducting a Remedial Investigation / Feasibility Study (RI/FS) of Bound Brook in Middlesex County (New Jersey), which is designated as Operable Unit 4 (OU4) of the Cornell Dubilier Electronics Superfund Site. According to the "Final Quality Assurance Project Plan (QAPP)" (dated October 2010), real-time modifications to the project can be implemented by documenting the modification and obtaining approval from the Project Manager and Site Quality Control Officer or designee (refer to Worksheet #6).

Field Modification No. 9 provides for the collection of 22 floodplain surface soil samples and 3 surface sediment (from a ponded area) samples to characterize the current polychlorinated biphenyl (PCB) Aroclor concentrations in Veterans Memorial Park and surrounding open "green" space on the floodplain to support the risk assessment. As part of the RI, floodplain surface soils were collected to assess potential exposure to residents recreating in the floodplains. Due to flooding of Bound Brook and transport of contaminated sediments onto the floodplains, USEPA requested that additional floodplain surface soils be collected in Veterans Memorial Park (South Plainfield, New Jersey) and the surrounding open "green" space on the floodplains located between Cedar Brook and Bound Brook. Soil and sediment samples collected from Veterans Memorial Park will be incorporated into the existing OU4 RI database. Together, these data will be used to evaluate nature and extent of contamination on the floodplains (which will be discussed in the OU4 RI); evaluate potential remedial alternatives for the floodplains (which will be discussed in the OU4 FS); and identify migration pathways, potential receptors, and potential human and ecological health risks in the floodplains (which will be discussed in the OU4 risk assessment).

**RATIONALE**:
USEPA requested that additional floodplain surface soils be collected in Veterans Memorial Park and the surrounding open "green" space on the floodplains located between Cedar Brook and Bound Brook.

291658

**ATTACHMENTS:**
QAPP Worksheets

Leonard J. Warner
The Louis Berger Group, Inc. Project Manager: _____

AmyMarie Accardi-Dey
The Louis Berger Group, Inc. Deputy Project Manager: _____
and Site Quality Control Officer

**ACRONYM LIST**

To simplify this QAPP modification, acronyms are defined in the list below (not embedded in the text).

Berger = The Louis Berger Group, Inc.
CCB = Continuing Calibration Blank
CCV = Continuing Calibration Verification
CDE = Cornell-Dubilier Electronics
cm = centimeters
Conc. = Concentration
DQO = Data Quality Objective
DQI = Data Quality Indicators
EDD = Electronic Data Deliverable
FS = Feasibility Study
GC/ECD = Gas Chromatography / Electron Capture Detector
GPS = Global Positioning System
ICAL = Initial Calibration
ICB = Initial Calibration Blank
ICV = Initial Calibration Verification
LCS = Laboratory Control Sample
MB = Method Blank
MDL = Method Detection Limit
MEDD = Multimedia Electronic Data Deliverable
MS = Matrix Spike
MSD = Matrix Spike Duplicate
NJDEP = New Jersey Department of Environmental Protection
OU2 = Operable Unit 2
OU3 = Operable Unit 3
OU4 = Operable Unit 4
PCB = Polychlorinated Biphenyls
QAPP = Quality Assurance Project Plan
QL = Quantitation Limit
R = Recovery
RI/FS = Remedial Investigation / Feasibility Study
RPD = Relative Percent Difference
SOP = Standard Operating Procedure
TCE = Trichloroethylene
TIC = Tentatively Identified Compounds
USACE = United States Army Corps of Engineers
USEPA = United States Environmental Protection Agency
VOC = Volatile Organic Compounds
µg/kg = micrograms per kilogram

**CONTENT**

**QAPP Worksheet 4**
**Project Personnel Sign-Off Sheet**

**Project Personnel Sign-Off Sheet**

| Project Personnel | Title | Telephone Number | Signature | Date Read |
|---|---|---|---|---|
| Ken Maas | USACE Project Manager | 816-389-3709 | | |
| Amy Darpinian | USACE Project Chemist | 816-389-3897 | | |
| Mark Austin | USEPA Project Manager | 212-637-3934 | | |
| Edward Dudek | The Louis Berger Group, Inc.<br>Project Manager | 914-798-3711 | | |
| Len Warner | The Louis Berger Group, Inc.<br>Technical Project Manager | 914-798-3721 | | |
| AmyMarie Accardi-Dey | The Louis Berger Group, Inc.<br>Deputy Project Manager and<br>Site Quality Control Officer | 914-798-3712 | | |
| F. Chris Purkiss | The Louis Berger Group, Inc.<br>Field Leader | 973-407-1685 | | |
| Field Crew | To Be Determined | | | |
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**QAPP Worksheet 10**
**Problem Definition**

**Problem Definition (Worksheet 10)**

**The problem to be addressed by the project**:
On behalf of the USACE and USEPA, Berger is conducting a RI/FS at the CDE Superfund Site in Middlesex County, New Jersey. The former CDE company released material contaminated with PCB and TCE directly onto the soils during its operations. USEPA has detected PCB compounds in the groundwater, soil, and in the building interiors at the former CDE manufacturing facility and at nearby residential, commercial, and municipal properties. The conceptual site model for Bound Brook is that historical disposal of PCB-containing capacitors, PCB transformer oils, and VOCs at the former CDE facility (OU2) is the source of contamination to the groundwater (OU3) and Bound Brook sediments (OU4). Flooding of Bound Brook has caused the resuspension and transport of contaminated sediments onto the floodplain soils, creating a potential soil exposure for human health. For more information, refer to the OU4 RI/FS Work Plan (dated July 2010).

**The environmental questions being asked**:
The human health and ecological Conceptual Site Exposure Models are provided in the OU4 RI/FS Work Plan (July 2010). As part of the RI, floodplain surface soils were collected to assess potential exposure to residents recreating in the floodplains. Due to flooding of Bound Brook and transport of contaminated sediments onto the floodplains, USEPA requested that additional floodplain surface soils be collected in Veterans Memorial Park (South Plainfield, New Jersey) and the surrounding open "green" space on the floodplains located between Cedar Brook and Bound Brook to support the risk assessments.

Initial soils sampling in Veterans Memorial Park occurred in 1999 with the collection of 34 surface soil samples (0-5 cm) by the USEPA. The Borough of South Plainfield instituted an interim remedial action at the park in 2003 to (1) excavate and remove observed tar-like substance emanating at the ground surface, (2) excavate and remove the exposed asbestos tiles on the pond embankment, (3) excavate or cap elevated PCB contamination in the baseball field, and (4) use institutional controls to limit access to areas with known elevated PCB contamination (north and west of the park).

Field Modification No. 9 provides for the collection of 22 floodplain surface soil samples and 3 surface sediment (from a ponded area) samples to characterize the current PCB Aroclor distribution in Veterans Memorial Park and surrounding open "green" space on the floodplain. Soil and sediment samples collected under Field Modification No. 9 will be incorporated into the existing OU4 RI database. Together, these data will be used to evaluate nature and extent of contamination on the floodplains (which will be discussed in the OU4 RI); evaluate potential remedial alternatives for the floodplains (which will be discussed in the OU4 FS); and identify migration pathways, potential receptors, and potential human and ecological health risks in the floodplains (which will be discussed in the OU4 risk assessment).

**Observations from any site reconnaissance reports**:
Site reconnaissance of Veterans Memorial Park conducted on March 27, 2013 (refer to memorandum dated April 16, 2013). Refer to Worksheet 18 for rationale on sampling locations.

**A synopsis of secondary data or information from site reports**:

- RI/FS Work Plan – Cornell-Dubilier Electronics Superfund Site, OU4 Bound Brook. Prepared by Berger for the USACE and USEPA (July 2010).
- RI/FS QAPP – Cornell-Dubilier Electronics Superfund Site, OU4 Bound Brook. Prepared by Berger for the USACE and USEPA (October 2010) and associated modifications:
  - Field Modification No. 1 (dated April 2011) – Combined Phase 2 and Phase 3 of field program
  - Field Modification No. 2 (dated September 2011) – Modifications to the surface water program
  - Field Modification No. 3 (dated October 2011) – Modifications to soil boring program
  - Field Modification No. 4 (dated October 2011) – Expansion of study area and additional sediment traps and Ekman dredge samples

**Problem Definition (Worksheet 10)**

- Field Modification No. 5 (dated June 2012) – Modifications to the reference area program
- Field Modification No. 6 (dated June 2012) – Development of a porewater program
- Field Modification No. 7 (dated April 2012) – Development of modeling data needs
- Field Modification No. 8 (dated June 2012) – Modification to the deep soil boring program
- Field Modification No. 9 (this document) – Development of floodplain surface soil program at Veterans Memorial Park

- RI Cornell-Dubilier Electronics Superfund Site, OU4 Bound Brook: Soil boring data collected by Berger for the USACE and USEPA.
- Weston Consultants, 2000. "Floodplain Soil/Sediment Sampling and Analysis Summary Report." Prepared for USEPA Removal Action Branch. January 17, 2000.
- PMK Group, 2002a. "Site Investigation /Interim Remedial Action Work Plan – Veterans Memorial Park." Prepared for Borough of South Plainfield. October 18, 2002.
- PMK Group, 2002b. "Preliminary Assessment Report – Veterans Memorial Park." Prepared for Borough of South Plainfield. April 15, 2002.
- PMK Group, 2004. "Interim Remedial Action Report – Veterans Memorial Park." Prepared for Borough of South Plainfield. February 12, 2004.

**The possible classes of contaminants and the affected matrices**:
PCB Aroclors (USEPA Method SW-846 8082A) – 22 floodplain surface (0-15 cm) soil samples and 3 surface (0-15 cm) sediment samples from a ponded area

**The rationale for inclusion of chemical and nonchemical analyses**:
PCB Aroclors will be analyzed and reported to assess potential exposure to residents recreating in the floodplain soils/sediments, including Veterans Memorial Park and surrounding open "green" space on the floodplain located between Cedar Brook and Bound Brook.

**Project decision conditions ("If..., then..." statements)**:
Veterans Memorial Park data will be combined with existing OU4 RI field data and will be used to fulfill the project DQOs (refer to QAPP Attachment 1, October 2010). Together, these data will be used to evaluate nature and extent of contamination on the floodplains (which will be discussed in the OU4 RI); evaluate potential remedial alternatives for the floodplains (which will be discussed in the OU4 FS); and identify migration pathways, potential receptors, and potential human and ecological health risks in the floodplains (which will be discussed in the OU4 risk assessment).

The overarching data needs are to determine the contaminants concentration in 0-15 cm surface soil samples in Veterans Memorial Park and 0-15 cm surface sediment samples in the ponded area adjacent to the park. These data will be compared to risk-based clean-up levels to evaluate whether current surface concentration pose an unacceptable risk to human receptors (*e.g.*, recreational users) in Veterans Memorial Park. If an unacceptable risk is detectd, the data will be considered in the Draft Final FS for evaluation of remedial alternative along with the other floodplain soil data.

**QAPP Worksheet 11**
**Project Quality Objectives/Systematic Planning Process Statements**

**Project Quality Objectives /Systematic Planning Process Statements (Worksheet 11)**

**Who will use the data?**
USEPA, USACE, NJDEP, project investigation team, and risk assessors.

**What will the data be used for?**
Veterans Memorial Park data will be combined with existing OU4 RI field data and will be used to fulfill the project DQOs (refer to QAPP Attachment 1, October 2010). Together, these data will be used to evaluate nature and extent of contamination on the floodplains (which will be discussed in the OU4 RI); evaluate potential remedial alternatives for the floodplains (which will be discussed in the OU4 FS); and identify migration pathways, potential receptors, and potential human and ecological health risks in the floodplains (which will be discussed in the OU4 risk assessment). .

**What type of data is needed?**
PCB Aroclors (USEPA Method SW-846 8082A) from floodplain soils and sediment. Refer to Worksheet 20 for number of samples; refer to Worksheet 18 and the attached Figure 1 for proposed sampling locations.

**How "good" do the data need to be in order to support the environmental decision?**
Data must be technically defensible and of sufficient quality to support the project DQO (refer to QAPP Attachment 1, October 2010). Refer to Worksheet 15 for summary of analytical parameters, associated potential action levels, and quantitation limits.

**How much data are needed? (number of samples for each analytical group, matrix, and concentration)**
PCB Aroclors: 25 locations × 1 sample/location × 1 event = 25 field samples plus associated QC.

25 locations (total) will be divided into 22 floodplain surface soil samples (0-15 cm) from Veterans Memorial Park and surrounding open "green" space on the floodplain and 3 surface sediment samples (0-15 cm) from the pond located adjacent to Veterans Memorial Park. (Sampling depths were selected to be consistent with OU1 residential property sampling and "right-of-way" soil sampling.)

**Where, when, and how should the data be collected/generated?**
Where: Bound Brook (Middlesex County, New Jersey) adjacent to the former CDE facility
When: May 2013 through June 2013
How: Soil and sediment samples will be per the QAPP and associated field modifications

**Who will collect and generate the data**?
Project Team field personnel will collect the samples in accordance with the QAPP and associated field modifications.

- SOP No. 01: Procedure to Conduct Sample Management
- SOP No. 06: Procedure to Locate Sample Points Using a Global Positioning System
- SOP No. 21: Collection and Processing of Surface Sediments (Note: Field crew will use either an Ekman dredge or ponar to collect 0-15 surface sediment samples; field equipment will be determined in the field based on sediment texture in ponded area.)

- SOP No. 22: Collection and Processing of Surface Soils (Note: Field crew will use a soil auger to collect 0-15 surface soil samples.)
- SOP No. 24: Decontamination of Sediment and Soil Sampling Equipment

The samples will be analyzed for chemical analytical parameters by subcontract laboratory (TestAmerica, Inc.) and validated by an independent third party.

**How will the data be reported?**

Field records: Field notes will be recorded on field sheets following Worksheet 26.

Sediments: Laboratory EDD and data packages for PCB Aroclors will be reported and validated in units of concentration (mass of contaminant per mass of dry sediment). Analytical data will be reported according to the requirements in Worksheet 29; data validation will follow requirements provided in Worksheets 34 through 36. Validated data will be provided to the USEPA as a MEDD deliverable (formatted consistent with the requirements outlined in USEPA website: http://www.epa.gov/Region2/superfund/medd.htm).

**How will the data be archived?**

Electronic data (MEDD deliverables and applicable Microsoft Excel spreadsheets containing validated data) and copies of laboratory reports will be provided to the USEPA and USACE. A copy of this material will be kept in the Berger project files. The length of time that records will be archived will be at the discretion of the USACE and USEPA.

**QAPP Worksheet 12 Measurement Performance Criteria**

| | |
|---|---|
| **Matrix** | Soil/Sediment |
| **Analytical Group** | PCB Aroclors |
| **Concentration Level** | Low |

| Sampling Procedure | Analytical Method/SOP | DQIs | Measurement Performance Criteria[1] | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A) |
|---|---|---|---|---|---|
| Soils/Sediment SOP No. 21 and 22 | USEPA Method SW-846 8082A (TestAmerica SOP 8R-GC-005) | Sensitivity | <QL | Equipment Blank (Clean Ottawa Sand) | S & A |
| | | Sensitivity | <QL | Method Blank | A |
| | | Accuracy and Precision | 55-120%R for Aroclor 1016<br>55-125%R for Aroclor 1260<br>≤30RPD | MS/MSD | A |
| | | Accuracy | 55-120%R for Aroclor 1016<br>55-125%R for Aroclor 1260 | LCS | A |
| | | Accuracy | 45-125%R for decachlorobiphenyl (primary surrogate) and 30-130%R for TCX (advisory surrogate) for field samples and QC samples | Surrogate Recovery | A |
| | | Precision | RPD <40% for duplicate values greater than or equal to 5 times the QL | Field Duplicate | S & A |
| | | Completeness | >90% sample collection<br>>90% laboratory analysis | Data Completeness Check | S & A |

1. Samples (solids) will be extracted following USEPA Method SW-846 3541 (Soxhlet) using a hexane/acetone solvent mix.

**QAPP Worksheet 15 – Reference Limits and Evaluation Tables**
**Matrix: Soils and Sediment**
**Analytical Group: PCB Aroclors**
**Concentration Level: Low**

| Analyte | CAS Number | Units | Project Action Level [1] | Project QL (units of mg/kg) [2] | Analytical Method | | Achievable Laboratory Limits (units of mg/kg) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | MDLs | Method QLs | MDLs [3] | QLs [3] |
| Aroclor 1016 | 12674-11-2 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 5.6 | 17 |
| Aroclor 1221 | 11104-28-2 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 4.3 | 17 |
| Aroclor 1232 | 11141-16-5 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 3.3 | 17 |
| Aroclor 1242 | 53469-21-9 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 6.7 | 17 |
| Aroclor 1248 | 12672-29-6 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 2.0 | 17 |
| Aroclor 1254 | 11097-69-1 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 2.8 | 17 |
| Aroclor 1260 | 11096-82-5 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 2.4 | 17 |
| Aroclor 1262 | 37324-23-5 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 1.5 | 17 |
| Aroclor 1268 | 11100-14-4 | µg/kg | NA | 17 | Per USEPA 8082 | Per USEPA 8082 | 1.4 | 17 |

**Notes on Worksheet 15**

1. USEPA has not approved project-specific action limits for these parameters.
2. The project quantitation limits are equal to the laboratory achievable QLs (TestAmerica).
3. The laboratory achievable QLs and MDLs were determined by TestAmerica Inc. (SOP 8R-GC-005) using a Soxhlet extraction method (EPA Method SW-846 3541). Depending on sample matrix effects and percent moisture, the actual laboratory detection limits may differ and vary per sample.
4. Laboratory will quantify PCB Aroclor concentrations empirically based on Method 8082A requirements (a minimum of 3 peaks must be chosen for each Aroclor; preferably 5 peaks. The peaks must be characteristic of the Aroclor in question. Choose peaks in the Aroclor standards that are at least 25% of the height of the largest Aroclor peak).
5. Laboratory results will be reported on a dry basis in units of mg/kg.
6. Tentatively identified compounds (TIC) will not be reported by the laboratory.

**QAPP Worksheet 18**

**Sampling Locations and Methods/SOP Requirements Table (Worksheet 18)**

| Sampling Location/ID Number | Matrix | Estimated Penetration Depth | Analytical Group | Conc Level | Number of Field Samples | Sampling SOP Reference | Rationale of Sampling Location |
|---|---|---|---|---|---|---|---|
| SD-VMP01 though SD-VMP03 | Sediment | 0-15 cm | PCB Aroclor | Low | 1 sample per location (total of 3 sediment) | SOP No. 21 | Assess potential exposure to residents recreating in Veterans Memorial Park and surrounding open "green" space on the floodplain as well as potential exposure to residents recreating in ponded area near Veterans Memorial Park. Sampling locations were selected following site reconnaissance (dated March 27, 2013), which documented evidence of human use in floodplain area and around the pond, review of existing floodplain soil and sediment data, and review of interim remedial measures implemented at Veterans Memorial Park by the Borough of South Plainfield. |
| SL-VMP01 though SL-VMP22 | Soil | 0-15 cm | PCB Aroclor | Low | 1 sample per location (total of 22 soil) | SOP No. 22 | |

Refer to attached figure for proposed sampling locations.

**QAPP Worksheet 19**
**Analytical SOP Requirement Table**

**Analytical SOP Requirements Table**

| Matrix | Analytical Group | Concentration Level | Analytical and Preparation Method/SOP | Sample Volume | Containers (number, size, and type) | Preservation Requirements (chemical, temperature, light protected) [1] | Maximum Holding Time (preparation/ analysis) |
|---|---|---|---|---|---|---|---|
| Soil Sediment | PCB Aroclor | Low | USEPA Method SW-846 8082A | 4 oz (minimum of 50 grams) | Glass amber 4 oz | Ship and hold at 4 ±2 degrees Celsius in the dark | 14 days to extraction<br>40 days to analysis (time determined from the date of initiation of extraction) |

**QAPP Worksheet 20**
**Field Quality Control Sample Summary Table**

| Matrix | Analytical Group | Conc. Level | Analytical and Preparation SOP Reference | No. of Field Samples | No. of Field Duplicate Samples | No. of MS/MSD | No. Equipment Blanks | Estimated Total No. of Samples to Lab |
|---|---|---|---|---|---|---|---|---|
| Soil Sediment | PCB Aroclor | Low | USEPA Method SW-846 8082A | 25 (3 sediment and 22 soil) | 2 | 2 × 2 = 4 | 1 | 32 |

Notes on Worksheet 20:

1. Samples will be analyzed in two SDGs. Sediment and soil samples will both be treated as a "solid" matrix; QC samples will be applicable to both soil and sediment samples. QC samples (field duplicate and MS/MSD) will be included in each SDG.

**QAPP Worksheet 23**
**Analytical SOP Reference Table**

**Analytical SOP References Table**

| Reference | Title, Revision Date, and/or Number | Definitive or Screening Data | Analytical Group | Instrument | Organization Performing Analysis | Modified for Project Work? |
|---|---|---|---|---|---|---|
| PCB Aroclors | USEPA Method SW-846 8082A<br>"PCB by GC/ECD" SOP 8R-GC-005<br>(Revision 11, dated April 2011)<br><br>USEPA Method SW-846 3541<br>"Soxhlet Extraction" SOP BR-EX-007<br>(Revision 9, dated November 2012) | Definitive | PCB Aroclors | GC/ECD | TestAmerica, Inc. (Burlington)<br>30 Community Drive, Suite 11<br>South Burlington, VT 05403<br>RJ Lavigne<br>802-660-1990 | N |

**QAPP Worksheet 24**
**Analytical Instrument Calibration**

**Analytical Instrument Calibration Table**

| Instrument | Calibration Procedure | Frequency of Calibration | Acceptance Criteria | Corrective Action | Person Responsible for Corrective Action | SOP Reference |
|---|---|---|---|---|---|---|
| PCB Aroclor GC/ECD | **ICAL**: Multi 5-point calibration curve from Aroclor 1016 and Aroclor 1260 standards. Plus, single-point calibration for other PCB Aroclors at mid-calibration point. Clean the injection port and column prior to performing the ICAL.<br><br>**ICV**: Refer to TestAmerica SOP 8R-GC-005 for standard. Clean the injection port and column prior to performing the ICV.<br><br>**CCV**: Refer to TestAmerica SOP 8R-GC-005 for standard; concentration at or below mid-calibration point | **ICAL:** Initially; or if ICV or CCV fail<br><br>**ICV**: After ICAL<br><br>**CCV**: Before SDG; 1 per 10 field samples; and end of SDG | **ICAL:** ≤20 RSD<br><br>**ICV**: ±20% of expected value from ICAL<br><br>**CCV**: ±20% of expected value from ICAL and within established RT window | Stop analysis, investigate, and recalibrate. As necessary, reanalyze affected samples. Refer to TestAmerica SOP 8R-GC-005. | TestAmerica Inc. Project Manager RJ Lavigne 802-660-1990 | USEPA Method SW-846 8082A (TestAmerica SOP 8R-GC-005) |
| PCB Aroclor GC/ECD | **MB:** Analysis of analyte-free water. Clean the injection port and column prior to performing the MB. | **MB:** Before analysis of first extraction batch | **MB:** <QL | Stop analysis, investigate, and recalibrate. As necessary, reanalyze affected samples | TestAmerica Inc. Project Manager RJ Lavigne 802-660-1990 | USEPA Method SW-846 8082A (TestAmerica SOP 8R-GC-005) |

**QAPP Worksheet 28**

**QC Samples Table for PCB Congeners**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Analyte/Matrix** | PCB Aroclors (Soil and Sediment) | | **Sampler's Name** | | The Louis Berger Group Field Sampling Crew | |
| **Concentration Level** | Low | | **Field Sampling Organization** | | The Louis Berger Group Field Sampling Crew | |
| **Sampling SOP** | SOP No. 21 and 22 | | **Analytical Organization** | | TestAmerica Inc. (Burlington) | |
| **Analytical Method/ SOP Reference** | USEPA Method SW-846 8082A TestAmerica SOP 8R-GC-005 | | **No. of Sample Locations** | | Per Worksheet 20 | |
| **QC Sample** | **Frequency/Number** | **Method/SOP QC Acceptance Limits** | **Corrective Action** | **Person(s) Responsible for Corrective Action** | **Data Quality Indicator (DQI)** | **Measurement Performance Criteria** |
| Equipment Blank (Clean Ottawa Sand) | 1 per sampling event | SOP No. 21 and No. 22 | Field crew investigate issue | LBG field crew | Sensitivity | <QL |
| Method Blank | 1 per SDG or 1 per 20 samples (whichever is less) | TestAmerica SOP 8R-GC-005 | Stop analysis, investigate, and recalibrate. If there are no detects in samples, or if all detects are >10x MB level, re-prep and reanalysis is not be required. | TestAmerica Project Manager RJ Lavigne 802-660-1990 | Sensitivity | <QL |
| MS/MSD | 1 per SDG or 1 per 20 samples (whichever is less) | TestAmerica SOP 8R-GC-005 | Re-analyze and/or re-extract. Flag all reported values outside of control limits. | | Accuracy and Precision | 55-120%R for Aroclor 1016<br>55-125%R for Aroclor 1260<br>≤30RPD |
| LCS | 1 per SDG or 1 per 20 samples (whichever is less) | TestAmerica SOP 8R-GC-005 | Re-analyze and/or re-extract. Flag all reported values outside of control limits. | | Accuracy | 55-120%R for Aroclor 1016<br>55-125%R for Aroclor 1260 |

**QC Samples Table for PCB Congeners**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Analyte/Matrix** | PCB Aroclors (Soil and Sediment) | | **Sampler's Name** | | The Louis Berger Group Field Sampling Crew | |
| **Concentration Level** | Low | | **Field Sampling Organization** | | The Louis Berger Group Field Sampling Crew | |
| **Sampling SOP** | SOP No. 21 and 22 | | **Analytical Organization** | | TestAmerica Inc. (Burlington) | |
| **Analytical Method/ SOP Reference** | USEPA Method SW-846 8082A TestAmerica SOP 8R-GC-005 | | **No. of Sample Locations** | | Per Worksheet 20 | |
| **QC Sample** | **Frequency/Number** | **Method/SOP QC Acceptance Limits** | **Corrective Action** | **Person(s) Responsible for Corrective Action** | **Data Quality Indicator (DQI)** | **Measurement Performance Criteria** |
| Surrogate Recovery | All samples | TestAmerica SOP 8R-GC-005 | Re-analyze and/or re-extract. Flag all reported values outside of control limits. | | Accuracy | 45-125%R for decachlorobiphenyl (primary surrogate) and 30-130%R for TCX (advisory surrogate) for field samples and QC samples |
| Field Duplicate | 1 per sampling event | SOP No. 21 and No. 22 | Field crew investigate issue | LBG field crew | Precision | RPD <40% for duplicate values greater than or equal to 5 times the QL |

**QAPP Worksheet 30**
**Analytical Services Table**

**Analytical Services Table**

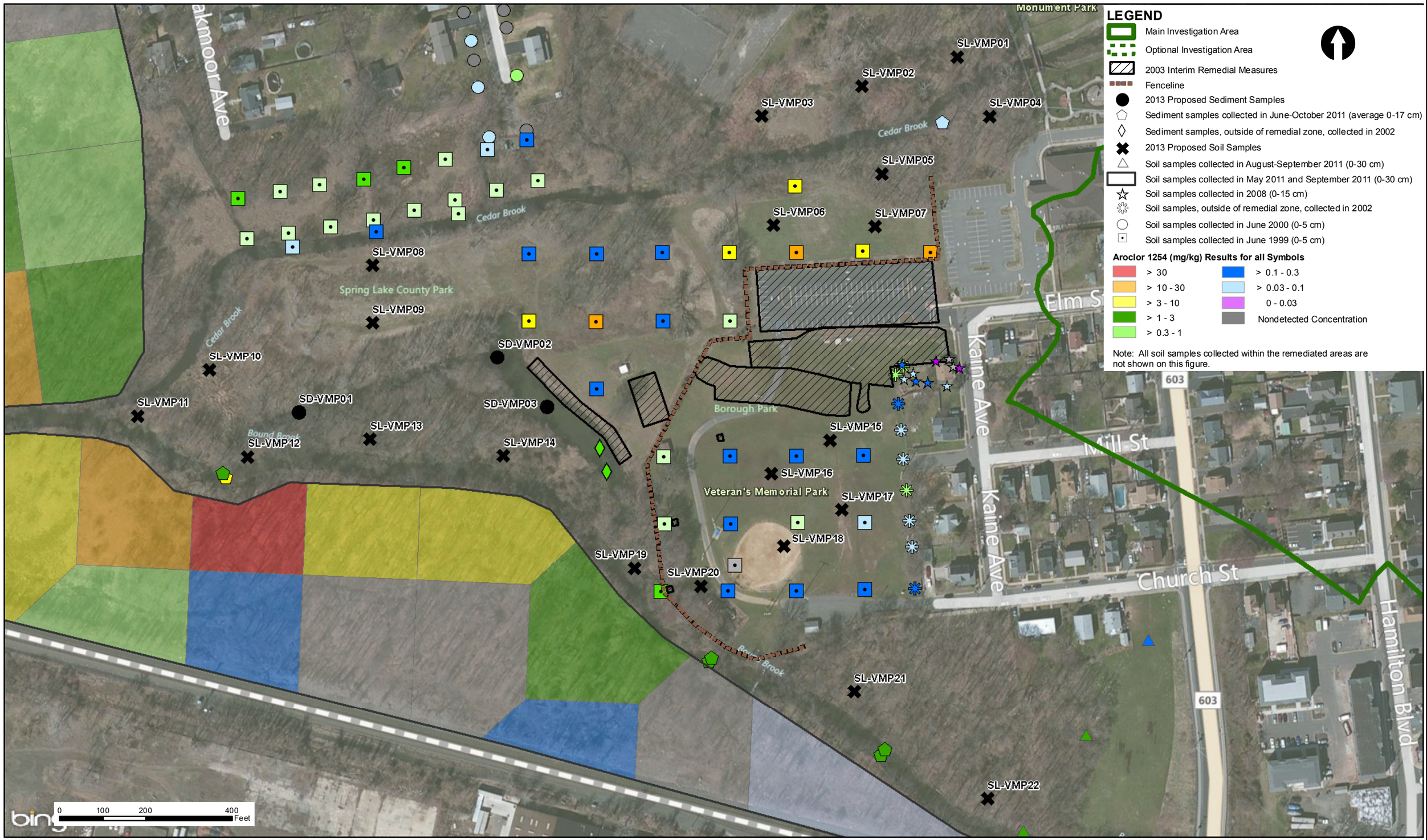
| Matrix | Analytical Group | Concentration Level | Sample Location/ ID Numbers | Analytical SOP | Data Package Turnaround Time | Laboratory (Name and Address, Contact Person, and Telephone Number) | Backup Laboratory |
|---|---|---|---|---|---|---|---|
| Soil<br>Sediment | PCB Aroclor | Low | Refer to Worksheet 18 and 20 | USEPA Method SW-846 8082A | EDD (MEDD Region 2 format) and data package (Level 4) within 10 business days of receipt of last sample | TestAmerica Inc. (Burlington)<br>30 Community Drive, Suite 11<br>South Burlington, VT 05403<br>RJ Lavigne<br>802-660-1990 | Not scheduled |

**QAPP Worksheet 36**
**Validation (Steps IIa and IIb)**

All data validation requirements stated in QAPP (dated October 2010) Worksheet 35 and 36 will be incorporated hereinto this Field Modification No. 9 with the following addenda:

- Data validation will include Stage 4 validation of all sample delivery groups.
- Validation will follow USEPA National Functional Guidelines.
- Soil and sediment samples will be analyzed in one sample delivery group and treated as one matrix (solid). QC samples will be applicable to both soil and sediment samples.
- TIC will not be reported by the laboratory.

| Qualifier | Type | Qualifier Definition |
|---|---|---|
| * | Laboratory | Recovery or RPD exceeds control limits |
| * | Laboratory | ISTD response or retention time outside acceptable limits |
| ^ | Laboratory | Instrument related QC exceeds the control limits |
| 4 | Laboratory | MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable. |
| B | Laboratory | Compound was found in the blank and sample. |
| D | Laboratory | Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples. |
| E | Laboratory | Result exceeded calibration range. |
| F | Laboratory | MS/MSD Recovery or RPD exceeds the control limits |
| H | Laboratory | Sample was prepped or analyzed beyond the specified holding time |
| J | Laboratory | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| p | Laboratory | The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported. |
| U | Laboratory | Indicates the analyte was analyzed for but not detected. |
| X | Laboratory | Surrogate is outside control limits |
| U | Validation | Compound/analyte was analyzed but the result was negated by the validator since it was detected in a blank at a similar level |
| UE | Validation | Compound/analyte was not detected (or was negated by the validator) but the quantitation/detection limit is uncertain due to QA/QC issues identified |
| E | Validation | Quantitation is approximate (estimated) due to limitations identified during the QA/QC review. |
| R | Validation | The result was rejected during data validation |
| J | Validation | Compound/analyte was analyzed but the result is estimated due to QA/QC issues identified |
| | | |

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|---|---|---|---|
| | Cornell-Dubilier Electronics Superfund Site<br>South Plainfield, New Jersey | **Aroclor 1254 Surface Soil and Sediment Concentrations near and within Veterans Memorial Park and Proposed 2013 Sampling Locations**<br>*Bound Brook Remedial Investigation/Feasibility Study* | 2013<br>Figure 1 |